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09/676,107	09/29/2000	Kurt P. Weckstrom	2532-00231	2219

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EXAMINER

ROSENBERGER, RICHARD A

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 05/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/676,107

Applicant(s)

WECKSTROM, KURT P.

Examiner

Richard A Rosenberger

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 64 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 64 is dependent upon claims 48, 47, and 42, and refers to "the first and second radiation sources". None of claims 48, 47 and 42 contain antecedent basis for "the first and second radiation sources".

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reader et al (US 3,970,430) in view of the admitted prior art in the specification, Passaro et al (US 4,692,621), Schoch (US 4,637,729) and Harte et al (US 3,792,272).

The reader et al reference teaches an optical sensor for measuring the NO<sub>2</sub> content of a sample gas, and teaches doing so using a radiation source with an

emission spectrum with a wavelength range of "from 410 to 600 nm", which is in the range of the instant claims("about 600 nm", "about 520", and "between about 380-520 nm" in various of the instant claims). There is a sample chamber (sample cell 11) having an inlet conduit for supplying a flow of the gas to be measured (sample 15), and an outlet conduit (discharge 21). There is a detector (photometer 23) for receiving the light passed through the sample to produce a signal representative of the NO<sub>2</sub> content of the sample.

The optical NO<sub>2</sub> content detection system of the Reader et al reference is disclosed in and as a part of a broader system in which the change in time of the NO<sub>2</sub> content is of interest. The performance of the optical NO<sub>2</sub> detector taught by Reader et al is shown in figure 8, where the output is indicated by line A, shown as being continuous ("The exponentially increasing solid line labeled A is a plot of the absorbance as the function of time as measured by photometer 23.", column 11, lines 29-32). Thus the optical NO<sub>2</sub> detector per se is disclosed as operating "in real time", producing a continuous line output A which is representative of the NO<sub>2</sub> content at various times.

Reader provides light at two different wavelength ranges, on being a measurement range and the other a reference range (column 5, lines 11-18). The light source provides both: "[t]he radiation source means comprises means to generate detecting radiation and means to generate reference radiation" (column 5, lines 56-56). Reader chooses to use a single light source to provide both: "both are combined into one

light source 25" (column 5, line 56-57). Those in the art were aware that, rather than combining the two in one light source, two light sources could be used in the manner shown as known by Schoch. Schoch refers to "light sources" (plural) (column 3, line 20). Schoch also notes, like Reader, that it is possible to use a single light source for both (column 3, lines 25-27), thus demonstrating the known functional equivalence of the two arrangements. Schoch also mentions that the two can be sent through the sample gas alternately (column 3, line 24), mentioning also that they can alternately be sent simultaneously, showing the known functional equivalence of the two. Passaro et al also shows an arrangement in which light of different wavelength ranges are sent through the sample sequentially, one of which is a reference wavelength (column 3, line 54).

Reader et al shows the use of a reference detector (31) as well as a measuring detector (36) which receive the light of different wavelength ranges. Reader teaches that this can be accomplished by means of a pair of filters (35, 29). Other known reference signal obtaining arrangements would have been obvious given the teaching of obtaining a reference signal. Passaro et al shows a single detector (15) which sequentially detects the light beams of different wavelengths as they are passed through the sample, which would have been obvious in the basic system of Reader et al because it is a known manner of receiving the two wavelengths taught by Reader et al.

The Reader reference states that the light source "may be of any suitable type" (column 5, lines 57-58); the only functional limitation given for the light source is that it produces light in the appropriate wavelength range. The instant disclosure states that

the semiconductor light source disclosed and claimed is a commercial item (page 5, lines 18-19). It therefore would have been obvious to use this known, available light source, known to produce light in an appropriate wavelength range, for the light source of Reader et al.

The instant specification states that the detector used is "conventional" (page 7, line 19) or is commercially available (page 7, lines 19-21). The use of conventional and commercially available detectors for the detectors of Reader et al, which detect the wavelength range being used would have been obvious because it is the detection of the light of interest, and not the particular means used for the detection, which is important for the functioning of the device. As the light disclosed in the Reader et al reference is generally in the blue wavelength range, using a blue enhanced detector would have been obvious because the efficiency of the detection of the desired light would thus be enhanced.

It is known in the art to modulate the light source; see Harte et al. Note column 2, line 65 through column 3, line 6. That reference teaches that this modulation will "enable accurate filtering so that most electronic 'noise' or interference can be removed" and teaches that the device, because of the modulation, is not subject to low frequency noise. Those in the art, wishing to so reduce the effect of noise, would have found it obvious to modulate the light in any such optical system, including one which measures NO<sub>2</sub>. Note the bandpass filtering of the signal in the Harte reference so "[t]he signal-to-noise ratio is further enhanced" (column 8, lines 46-50)

Reader et al schematically shows a heating means (12') associated with the sample chamber, and teaches that this controls the temperature and maintains it at a constant temperature (column 5, lines 35-39).

Reader et al teaches using a flow cell to detect the  $\text{NO}_2$  in the gas being directed through the flow cell, and teaches that the optical measurement disclosed will detect the  $\text{NO}_2$  but not the NO (column 1, lines 14-17). If one were interested in just the  $\text{NO}_2$  content separate from the NO content, it would have been obvious to make this known measurement without first converting the NO to  $\text{NO}_2$ .

As the gas flows through such a measuring apparatus, it would have been obvious to direct the gas, after it has been measured, to any additional measuring apparatus for additional measurements which may be of interest. The purely optical measurement does not alter the gas and so the gas can be measured for additional components. The claimed additional measurement is known and is commercially available (the instant specification, page 9, lines 27-30). Using an optical sensor to measure gas breathed by a patient is known, as shown, for example, by Passaro et al. Placing an  $\text{NO}_2$  detector in the air path of a patient, when the  $\text{NO}_2$  content is desired to be known, would have been obvious; Passaro et al shows such a serial arrangement in which an  $\text{O}_2$  sensor is attached to the output of an optical sensor for detecting other gasses; similarly any known second gas content detector, including known NO detectors, can be placed in series with an optical detector for another gas.

5. The remarks filed 9 April 2003 have been considered, but have not been found persuasive.

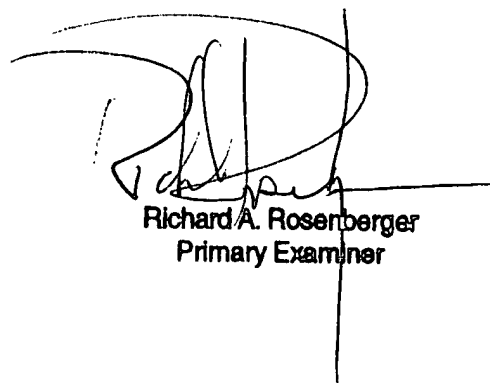
While it is correct that the Reader et al reference is in general directed to a larger more comprehensive system, that reference does teach an optical NO<sub>2</sub> detector of the type claimed, which does detect, in real time, the substantially instantaneous NO<sub>2</sub> level in the sample. The chemical reaction disclosed in the Reader et al reference is not directed to the detection of NO<sub>2</sub>, but is a method of converting NO to NO<sub>2</sub> so the NO<sub>2</sub> detector can detect the NO level as well as the NO<sub>2</sub> level. The chemical reaction is not part of the NO<sub>2</sub> measurement, and those in the art would have been able to use the NO<sub>2</sub> measurement per se to measure NO<sub>2</sub> in other broad environments where the level of NO<sub>2</sub> is of interest.

6. Papers related to this application may be submitted to Group 2800 by facsimile transmission. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The fax number is (703) 308-7722.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to R. A. Rosenberger whose telephone number is (703) 308-4804. The examiner's normal work schedule is 8:00 to 4:30 eastern time, Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

R. A. Rosenberger  
6 May 2003



Richard A. Rosenberger  
Primary Examiner